

Notice of Allowability

Application No.

09/529,384

Examiner

Donald L. Storm

Applicant(s)

HOVELL ET AL.

Art Unit

2654

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to AMENDMENT/RESPONSE filed August 23, 2004.
2. ☒ The allowed claim(s) is/are 1-3,6-18 and 21-26.
3. ☒ The drawings filed on 13 April 2000 and 23 August 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date hereto.
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to the Applicant, an amendment may be filed as provided by 37 CFR § 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee. Authorization for this examiner's amendment was given in a telephone interview with Mr. Raymond Y. Mah on October 27, 2004. The Examiner called Mr. Mah at the telephone number that appears in a paper filed June 1, 2000 and signed by an attorney of record. (See MPEP § 408.)

The application has been amended as indicated in the following pages.

AMENDMENTS TO THE SPECIFICATION:

Please amend the paragraph beginning at page 6, line 7, as follows:

Figure 4 shows the relationship between a first model instance and the model instances dependent thereon, each of the model instances having a plurality of states;

Please amend the paragraph beginning at page 9, line 12, as follows:

By way of illustration, Figure 4 shows the instantiation of models. Each model instantiation in response to exit tokens from the k model has a plurality of states.

AMENDMENTS TO THE CLAIMS:

1. (currently amended) A method of recognising a pattern comprising a sequence of sub-patterns, the method comprising:
- a) generating a data sequence representative of a physical entity;
 - b) applying the data sequence to a set comprising active models in a network of models including at least one model, wherein each model represents a sub-pattern and comprises a finite state network with a plurality of respective states;
 - c) assessing each state of members of said set and deactivating those states that do not meet a predetermined first criterion, between the application of successive data elements;
 - d) selecting a subset of the outputs of the members of said set according to a predetermined second criterion; and
 - e) adding further models to said set in dependence on the members of said subset when said subset is selected, wherein each further model includes a plurality a respective states, the further models take at least one of the subset members as inputs, and each model represents a sub-pattern and in use outputs an indication of the degree of matching between an input data sub-sequence and the represented sub-pattern.

15. (currently amended) A method of operating a computer so as to recognise a pattern comprising a sequence of sub-patterns, the method comprising:

- generating a data sequence representative of a physical entity;
- applying the data sequence to a set comprising active models in a network of models including at least one model, wherein each model represents a sub-pattern and comprises a finite state network with a plurality of respective states;
- assessing each state of members of said set and deactivating those states that do not meet a predetermined first criterion, between the application of successive data elements;
- selecting a subset of the outputs of the members of said set according to a predetermined second criterion; and
- adding further models to said set in dependence on the members of said subset when said subset is selected, wherein each further model includes a plurality a respective states, the further models take at least one of the subset members as inputs, and each model represents a sub-pattern and in use outputs an indication of the degree of matching between an input data sub-sequence and the represented sub-pattern.

16. (currently amended) A pattern recognition apparatus for recognising a pattern comprising a sequence of sub-patterns, the apparatus comprising:

- means for generating a data sequence representative of a physical entity;

means for applying the data sequence to a set comprising active models in a network of models including at least one model, wherein each model represents a sub-pattern and comprises a finite state network with a plurality of respective states;

means for assessing each state of members of said set and deactivating those states that do not meet a predetermined first criterion, between the application of successive data elements;

means for selecting a subset of the outputs of the members of said set according to a predetermined second criterion; and

means for adding further models to said set in dependence on the members of said subset when said subset is selected, wherein each further model includes a plurality a respective states, the further models take at least one of the subset members as inputs, and each model represents a sub-pattern and in use outputs an indication of the degree of matching between an input data sub-sequence and the represented sub-pattern.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

The Applicant's AMENDMENT/RESPONSE, filed on August 23, 2004, has been entered.

Drawings

3. The proposed substitute drawing submitted by the Applicant was received on August 23, 2004, and this drawing sheet is substantively acceptable to the Examiner. This drawing has been entered; it is now the Fig. 9 of record.

Allowable Subject Matter

4. Claims 1-3, 6-18, and 21-26 are allowed. The claims have been renumbered for printing to be claims 1-3, 4-16, and 17-22.

5. The following is the Examiner's statement of reasons for allowance. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

By EXAMINER'S AMENDMENT elsewhere in this document, independent claims 1, 15, and 16 were amended to recite that the further models that are added when the subset is selected

include a plurality of states. The closest prior art of record (Klovstad) makes only one state active, that is, the first kernel of a further model, when all active kernels have been scored on the last active kernel. The allowable subject matter of each independent claim resides in the whole structure expressed by the combination of all limitations compared to the prior art of record, and no particular reference provides relevant, objective evidence to make the claimed apparatus and methods obvious by changing Klovstad's single-kernel activation of further models, along with timing the model's addition by subset selection and deactivating model states that do not meet a particular criterion, in particular.

Response to Arguments

6. The prior Office action, mailed February 23, 2004 (paper 10), requires corrected drawings, objects to the claims, and rejects claims under 35 USC § 102 and § 103, citing Klovstad and others. The Applicant's arguments and changes in AMENDMENT/RESPONSE, filed on August 23, 2004, have been fully considered with the following results.

7. With respect to objection to the drawings, the changes entered by amendment remove the confusing label. Accordingly, the objection is removed.

8. With respect to objection to those claims needing clarification, the changes entered by amendment provide clear descriptions of the claimed subject matter. Accordingly, the objection is removed.

9. With respect to rejection of claims under 35 USC § 102 and § 103, citing Klovstad alone and in combination, the Applicant's arguments appear to be as follows:

a. The Applicant's argument appears to be that step c) of the claims deactivates states within a model, but Klovstad deactivates words. This argument is not persuasive because Klovstad [at column 2, lines 36-40] explicitly points out that kernels of the word (model) are deactivated, but other kernels remain, called active kernels, that have not been deactivated. However, Klovstad [at column 16, lines 63-column 17, line 4] explicitly does not deactivate all kernels of entire words so that subsequent kernels can be activated, if it should happen that not all kernels are active when a word end is identified. Please see the prior Office action at numbered section 19 for more detail.

b. The Applicant's argument appears to be that Klovstad does not add a model when kernels are activated. This argument is not persuasive because the features upon which the Applicant's argument relies are not recited in the rejected claims. By activating a next kernel to the current frame and then repeating the assessment and adding as each next frame becomes the current frame, Klovstad adds further models one kernel at a time, which corresponds to a state, when the final kernel of the model is activated, the entirety of the model has been activated, even if some states were later deactivated during progress through the lattice of Fig. 10.

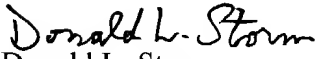
c. The Applicant's argument appears to be that the claims specifically recite a criterion to satisfy for "adding further models." This argument is not persuasive because adding the models is not set forth that way in the claim. The claim limitation of adding just says adding based on members of the subset. While this might be loosely considered a criterion of sorts, it is not a criterion that restricts whether or not models are added in the sense of "only when a criterion has been satisfied." Instead, this criterion-of-sorts limits the added further models; it does not determine whether their addition to the set occurs.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald L. Storm, of Art Unit 2654, whose telephone number is

(703) 305-3941. The examiner can normally be reached on weekdays between 8:00 AM and 4:30 PM Eastern Time. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (703) 305-9645.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Inquiries regarding the status of submissions relating to an application or questions on the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028 between the hours of 6 a.m. and midnight Monday through Friday EST, or by e-mail at: ebc@uspto.gov. For general information about the PAIR system, see <http://pair-direct.uspto.gov>.


Donald L. Storm
October 27, 2004


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SUPERVISORY PATENT EXAMINER